

## Appendix F

### Using Data Acquired Prior to August 15, 1996

This appendix covers the following topics:

- Using data acquired prior to August 15, 1996 in a Risk-Based Corrective Action (RBCA) analysis
- Soil sampling data: when to use default values
- Groundwater: which values to use
- Obtaining site-specific data
- Completing a Tier 1 site assessment

#### I. Using Data Acquired Prior to August 15, 1996

An owner/operator of a site may opt to complete a RBCA evaluation for any site. The RBCA evaluation must be conducted using actual data (where available), default values, or may require the collection of additional site-specific data. If an SCR has been approved, any deficiencies noted in the SCR approval letter must be considered for the development of a RBCA evaluation report.

**A. Data acquired prior to August 15, 1996, but an SCR has not been approved:** the site owner must prepare a RBCA evaluation using existing data and, if necessary, newly acquired data. All samples collected after August 15, 1996 must be analyzed in accordance with the rules in affect as of August 15, 1996. The RBCA evaluation must be submitted in the Tier 1 report or Tier 2 SCR format.

**B. An SCR has been accepted for high or low risk monitoring:** the department will eventually complete the RBCA evaluation for all high/low risk monitoring sites. If the owner/operator wishes to proceed, rather than wait for department action, they may retain a groundwater professional to perform the RBCA evaluation. If the SCR does not include all information necessary for the RBCA evaluation, default parameters must be used or the owner/operator may elect to provide site-specific data. The RBCA evaluation must be submitted in the Tier 1 report or Tier 2 SCR format. Any request for reclassification must: include all previous monitoring data which has been obtained, but not submitted; identify who collected the data and whether it was obtained under the supervision of a registered groundwater professional, and if so, who.

**C. An SCR has been accepted and a CADR is required:** a determination will be made by the DNR to evaluate if the contamination poses a significant threat to public health, safety, or the environment. If a significant threat is considered likely, the owner/operator must proceed with the CADR which must include a RBCA evaluation. The RBCA evaluation will determine appropriate site cleanup levels. If a significant threat is not considered likely, the owner/operator must complete a RBCA analysis of the site using site-specific data or default values. The RBCA evaluation must be submitted in the Tier 1 report or Tier 2 SCR format.

**D. A CADR has been accepted, but the corrective action has not yet been implemented:** a determination will be made by the DNR to evaluate whether the contamination poses a significant threat to public health, safety, or the environment. If a significant threat is considered likely, the owner/operator must proceed with the implementation of the corrective action. A report documenting implementation of the corrective action and which includes a RBCA evaluation, must be submitted to determine appropriate site cleanup levels. If a significant threat is not considered likely, the owner/operator must complete a RBCA evaluation of the site using site-specific data or default values. The RBCA evaluation must be submitted in the Tier 1 report or Tier 2 SCR format.

**E. A site has an active treatment system:** the owner/operator may elect to evaluate the site using the RBCA assessment procedures. The RBCA evaluation must be conducted after the system has been shut down *and* stabilization of site conditions has occurred. If an SCR was not completed, the soil sampling protocol specified for a Tier 1 assessment must be conducted prior to the evaluation. If an SCR has been completed, the RBCA evaluation must be conducted using site-specific data or default values. The RBCA evaluation must be submitted in the Tier 1 report or Tier 2 SCR format.

## II. Soil sampling data: when to use default values

The Tier 1 assumes a worst-case scenario for evaluating a site. Therefore, the maximum soil and groundwater contaminant values *must* be used for the evaluation. The use of site-specific benzene, toluene, and ethylbenzene (BTE) data in soils is preferred over application of soil default values (NOTE: xylenes are excluded since there are no applicable Tier 1 levels). The location of the maximum BTE and TEH data which exceeds an applicable Tier 1 level is considered a point of exposure or source location. The maximum contaminant point may not be the same location for all chemicals of concern.

To complete the RBCA evaluation, *all* prior soil data must be reviewed to determine if actual BTE data is available. For ease in evaluating a site, it is recommended a listing be compiled identifying the following: boring no., sample date, BTE data (identify if actual or default), TPH and TEH data. In the event actual BTE data is not included in pre-SCR or SCR data, it may be possible to contact the original testing laboratory to determine whether the data is available from the recorded chromatograms. If possible, obtain amended analytical laboratory data sheets which report the BTE data and submit with the Tier 1 report.

If only TPH and / or TEH data are available and actual BTE data cannot be obtained, the appropriate default percentages (refer to Table 1) must be applied to the maximum of each and the maximum BTE data used for the Group 1 RBCA evaluation. The point of exposure for each chemical of concern, Group 1 and Group 2, will be sample location exhibiting the maximum contaminant value.

Table 1 - Default Percentages for Data Conversion

	TPH (mg/Kg)	TEH (mg/Kg)	Free Product - gasoline (ug/L)	Free Product - diesel (ug/L)
Benzene (soil - mg/Kg), (water - ug/L)	1%	0.004%	17,500	370
Toluene ((soil - mg/Kg), (water - ug/L)	7%	0.05%	37,450	640
Ethylbenzene (soil - mg/Kg), (water - ug/L)	2%	0.03%	3,040	140
Xylenes (soil - mg/Kg), (water - ug/L)	8%	0.3%	15,840	580
Naphthalene (ug/L)				260
TEH (ug/L)				130,000

It must be noted the maximum TPH reading does not always correspond to the maximum actual BTE data; refer to Table 2 for an example. Using actual benzene data, the point of exposure for benzene in soils is boring S-5 (4.6 mg/Kg benzene). In the event default values had been used, the point of exposure would have been identified as S-6 (TPH reading of 700 mg/Kg converts to 7.0 mg/Kg benzene). If contaminant levels for the chemicals of concern (Group 1 or Group 2) are equal to or below the applicable Tier 1 action levels, no further action will be required for those chemicals of concern in soils.

Table 2 (all chemical data in mg/Kg)

	BORING No.	S-1	S-2	S-3	S-4	S-5	S-6
	Sample date	9/7/95	9/7/95	9/7/95	9/7/95	9/7/95	9/7/95
Group 1	Benzene	1.8	<0.05	0.60	1.6	<b>4.6</b>	0.74
	Toluene	4.0	2/0	0.12	0.20	9.4	3.2
	Ethylbenzene	3.8	3.1	1.0	3.3	6.4	<b>15</b>
	Actual or Default	actual	actual	actual	actual	actual	actual
Group 2	TEH	NA	NA	NA	NA	NA	NA
	TPH	300	350	47	180	390	<b>700</b>

If actual BTE data is available for only a portion of the data, you must compare actual data, where available, to data acquired using the default conversions. If multiple locations exceed the Tier 1 level for a specific chemical of concern (refer to Table 1, samples S-1, S-3, S-4, S-5, and S-6 for benzene), the point of exposure is the maximum value observed.

Because the Tier 1 assessment assumes the worst-case scenario, all soil data, regardless of age, must be considered for the RBCA evaluation. In the event the owner/operator elects to obtain current site-specific data, only the maximum TEH and BTE data points need to be re-sampled (exception: if the SCR acceptance letter identified problems with the soil contaminant plume delineation, additional soil sampling may be required to address the noted concerns). To acquire site-specific data or to verify contaminant levels, a boring must be placed no more than 5 feet from the original soil sample location. Soil samples must be taken at the same depth as the previous soil sample **and** at the depth exhibiting the maximum vapor reading (refer to field screening methods for soil borings).

### III. Groundwater data: Which values to use

As noted previously, Tier 1 assumes a worst-case scenario for evaluating a site. Unlike soils where the maximum soil sample data is used for the Tier 1 evaluation, the groundwater sample used in the RBCA evaluation must be the maximum of the two most recent samples taken from any one boring/monitoring well location. The sampling events must be separated by more than 6 months.

The owner/operator may elect to complete the RBCA evaluation using existing data. All groundwater sample locations (including boreholes, temporary wells, and monitoring wells) and data for the site must be considered. The location of the maximum individual BTEX and TEH data which exceeds the applicable Tier 1 level is considered a point of exposure. Like soils, the point of exposure may not be the same location for all chemicals of concern.

The groundwater professional must examine all applicable documents including, but not limited to, site closure reports, site assessments, SCR, SMRs, and CADRs, prior to conducting the RBCA evaluation to determine site conditions. For ease in evaluating the site data, it is recommended a single listing be compiled identifying the following: boring / MW no., date of sample, BTEX (reported separately), and TEH data (refer to Table 3 for an example).

Table 3 (all chemical data in ug/L)

	Boring / MW #	MW-2	MW-2	BH-3	BH-4	MW-12	MW-12
	Sample date	7/5/94	11/16/95	11/4/91	9/2/92	9/3/92	5/1/96
Group 1	Benzene	2,200	32,000	2,300	<b>55,000</b>	4,000	310
	Toluene	<b>54,000</b>	49,000	3,800	33,000	23,000	3500
	Ethylbenzene	2,900	2,600	14	<b>4,600</b>	4,200	3400
	Xylenes	11,000	11,000	8,200	18,000	<b>13,000</b>	8100
Group 2	TEH	2,200	2,400	<b>3,600</b>	1,300	2,200	800

The point of exposure for a chemical of concern in Group 1 or Group 2, is determined by evaluating all data. Using Table 3 as an example, the points of exposure would be as follows: Benzene @ BH-4, Toluene @ MW-2, Ethylbenzene @ BH-4, Xylenes @ MW-12, and TEH @ BH-3. If the maximum contaminant levels noted are from borings, that data must be used regardless of its age. If the owner/operator elects to acquire current data for a specific location, a monitoring well must be placed no more than 5 feet from the original sample location. A properly installed monitoring well must be installed, developed, and sampled prior to submittal of the RBCA evaluation. Installation of additional monitoring wells may also be needed to correct deficiencies noted in the SCR acceptance letter.

If the site owner/operator has, as of August 15, 1996, only submitted TEH data regarding soil contamination and the Tier 1 action level for TEH in soil is not exceeded, then sampling for TEH in groundwater is not required. If the Tier 1 level is exceeded, a groundwater sample must be obtained from that point of exposure and analyzed for appropriate constituents. If a monitoring well is not at that location, one must be installed.

#### **IV. Obtaining site-specific data**

An owner/operator may elect to obtain site-specific data to verify soil and/or groundwater contaminant data or to complete a deficient investigation. If additional data is collected, borings and monitoring wells must be installed to duplicate or to verify current soil contaminant levels in the suspected source or release areas. Borings/monitoring wells placed to replicate previous data must be placed no more than 5 feet from the original sample location.

Soil **and** groundwater samples from releases of petroleum-regulated substances must always be analyzed for the presence of benzene, toluene, ethylbenzene and xylenes (BTEX) by Iowa Method OA-1. In addition, if the release is suspected to include any petroleum-regulated substance other than gasoline or gasoline blends, or if the source of the release is unknown, the samples (both soil and groundwater) must be analyzed for the presence of Total Extractable Hydrocarbons (TEH) by Iowa Method OA-2.

#### **V. Completing a RBCA Evaluation**

An owner/operator may elect to submit a RBCA evaluation for any site. If the owner/operator so elects, the site shall be assessed, classified, and, if necessary, remediated in accordance with Chapter 135 of the Iowa Administrative Code (IAC). To the extent the data collected for the SCR does not include all information necessary for the Tier 1 evaluation, the owner/operator shall utilize default parameters (see Table 3) or may provide site-specific data.

If an owner/operator elects to perform a RBCA assessment, this department must be notified. Following notification, the owner/operator shall be responsible for preparation of the Tier 1 report or Tier 2 Site Cleanup Report.